

## Claims

1. Method for balancing rotors without journals, in which the rotor (2), which has a bore (6), is arranged on a bearing mandrel (5) of a balancing device and fluid is brought between rotor and bearing mandrel faces located opposite one another and the rotor (2) is set into rotation, wherein oscillations of the bearing mandrel (5) induced by imbalance are drawn on to determine the imbalance, characterized in that the rotor (2) is supported in a first bearing region in the radial direction by means of a liquid and in the bearing arrangement of a rotor (2) which has a pocket hole bore it is supported in a second bearing region in a presettable axial position on the bearing mandrel (5) by supplying fluid to a fluid chamber (40) positioned between the end of the pocket hole bore and the end of the bearing mandrel.
2. Method according to claim 1, characterized in that the presettable axial position of the rotor (2) on the bearing mandrel (5) is set by changing the volume of the fluid chamber (40).
3. Method according to claim 1 or claim 2, characterized in that the volume of the fluid chamber (40) is changed by pressure build-up in the fluid chamber (40).
4. Method according to claim 3, characterized in that with a rotor (2) held with an axis inclined towards the horizontal plane, the axial position of the rotor (2) on the bearing mandrel (5) is determined by the pressure arising in the fluid chamber (40) owing to the weight component of the rotor (2) and the pressure of the fluid supply, the pressure in the fluid chamber (40) being limited to a presettable value.
5. Method according to claim 4, characterized in that at least one outlet channel is provided between associated rotor and bearing mandrel faces, the flow cross-section of which is changed to limit the pressure.
6. Method according to one of the preceding claims, characterized in that the support in the first and second bearing regions is performed by means of a liquid, preferably an oil or oily liquid as fluid.

7. Bearing arrangement with a bearing mandrel (5) for holding a rotor (2), without journals but having a bore, in a balancing device in at least one first and one second bearing region, the bearing mandrel (5) having orifices for the passage of fluid, characterized in that first orifices (10) for fluid supply and at least one second orifice (20) for fluid discharge are provided in the bearing mandrel, when holding a rotor (2) having a pocket hole bore the bearing arrangement has a fluid chamber (40) constructed between the end of the pocket hole bore and the end of the bearing mandrel, which has at least one inlet and one outlet channel and the bearing mandrel (5) has at least the outlet channel.

8. Bearing arrangement according to claim 7, characterized in that the first orifices (10) are located on bearing mandrel circumferential faces in the first bearing region.

9. Bearing arrangement according to claim 7 or claim 8, characterized in that the first orifices (10) are located in two bearing planes (7, 8) of the bearing mandrel (5) at an axial distance from one another.

10. Bearing arrangement according to one of the preceding claims, characterized in that the second orifice (20) is arranged adjacent to the bearing planes (7, 8) and/or between them.

11. Bearing arrangement according to one of the preceding claims, characterized in that the inlet channel is formed by the annular gap (42) between the outer circumference of the bearing mandrel and the wall of the bore and/or a bore (43) ending in the end face of the bearing mandrel (5).

12. Bearing arrangement according to one of the preceding claims, characterized in that the outlet channel can be connected to the second orifice (20) and is formed by at least one exterior longitudinal groove (41) of the bearing mandrel (5) starting from the end face of the bearing mandrel (5) and/or an outlet bore.

13. Bearing arrangement according to claim 12, characterized in that the outlet orifice of the longitudinal groove (41) connecting the fluid chamber (40) to the second orifice (20) in

the bearing mandrel (5) and/or the outlet bore can be covered by the wall of the rotor bore (6).

14. Bearing arrangement according to one of the preceding claims, characterized in that inside the pocket hole bore an annular space (44) is constructed between the rotor (2) and the bearing mandrel (5), which is connected to the outlet channel and the second orifice (20).

15. Bearing arrangement according to claim 14, characterized in that the annular space (44) is formed on one side by a transition section between a first and a second section of the pocket hole bore and on the other side by a transition section between a first and a second section of the bearing mandrel (5).

16. Bearing arrangement according to claim 15, characterized in that a control edge (45) is formed between the transition section and the section of the pocket hole bore in which the fluid chamber (40) is located.